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The Significance of Partnership and Participatory Sharing of Geospatial Information through crisis mapping in Izu-Oshima

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1. Introduction

Various platforms enable online-based plotting of disaster information map using reviews and other social networking services (SNS). Examples Ushahidi has been noted since the Great East Japan Earthquake for its usefulness in promoting rapid situational awareness in disaster areas. This platform also is used OpenStreetMap (OSM), a free mapping project used to generate background maps. Indeed, as regards natural disasters that occurred in Japan after year of the Great East Japan Earthquake, simplified versions of information sharing sites have been established by volunteers, such as Crowdmap. Meanwhile, during the onslaught of Typhoon Wipha last October 2013, information sharing by volunteers progressed smoothly using the rapid launch of Crowdmap.

However, the method of geospatial information gathering in the event of a crisis as a means of quickly relaying information in and out of disaster areas, as typified by crisis mapping using Ushahidi, is not fully and properly utilized in Japan.This study examines the role of information sharing and the development of geospatial information on the Web related to disaster response.

2. Sharing of geospatial information by participatory mapping in Izu-Oshima

To promote Izu-Oshima tourism around the Geopark with the aid of information technology, Izu-Oshima Tourist Association and other groups held the Hackathon and Mapping Party in January 2013. In this event, a detailed map created or developed smartphone applications for leisure by about 30 cooperating participants composed of OSM developers and mappers, as well as local residents involved in geopark's tour guide.

3. Cooperation with other organizations and launch of crisis mapping during the occurrence of Typhoon Wipha

After the event in January 2013, participants continue to engage in exchanges through a Facebook group, including participants of the island nature tour guide. For instance, users in Tokyo, who tuned in to the news regarding the occurrence of heavy rain and landslides brought by typhoon Wipha last October 16, intensified their information collection and uploaded data on the Web site very quickly. Twitter accounts with high reliability, such as that of "Izu-Oshima's disaster prevention", published information picked up by disaster prevention radio stations.

In another case, the Red Relief Image Map made by Asia Air Survey and slant ortho-photo data gathered by emergency shooting by some survey companies provided as a possible WMS layer through "e-com map" of the Research Institute for Earth Science and Disaster Prevention and Geoserver of the Code for Japan community. Such geospatial information can serve as the basic data for the estimation of location information, in which Crowdmap helps screen information via SNS features. As such, the number of page views of Crowdmap reached 12,000, and 248 reports are posted on Crowdmap in about a month after the disaster. In addition, as information transfer throughout and mapping of the disaster area had become a major issue, it was reported in local as well as analog information of paper maps, such as the large-format guide to the Great East Japan Earthquake by the Nature and Tourism Association staff.

4. Conclusions

In Japan, crisis mapping that fully utilizes the Web, such as online maps, has come to be carried out quickly and serve as a source of understanding and cooperation between volunteers and various organizations. In this context, the need for information gathering and sharing at a high public degree in the initial disaster stage is recognized, triggered by the events of the Great East Japan Earthquake. In addition, even in areas where information technology and geospatial information have not been as highly developed compared with Izu-Oshima, the cases covered in this study revealed that stakeholders could work together through workshops to build a relationship aimed at advancing information sharing development.

Keywords: crisis mapping, crowdsourcing, Ushahidi, volunteered geographic information, Izu-Oshima island